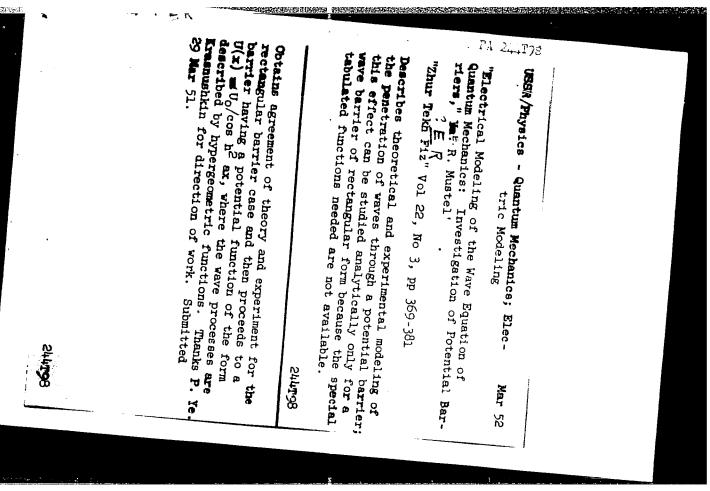
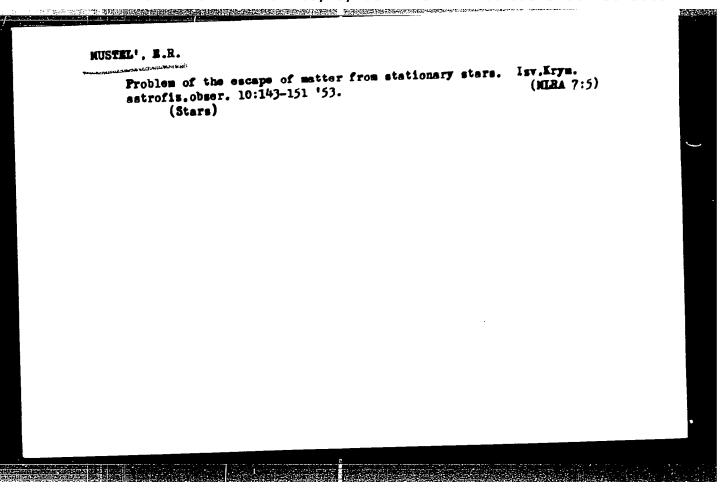
MBCULL, T. R., CASECUI, A. I.	San and
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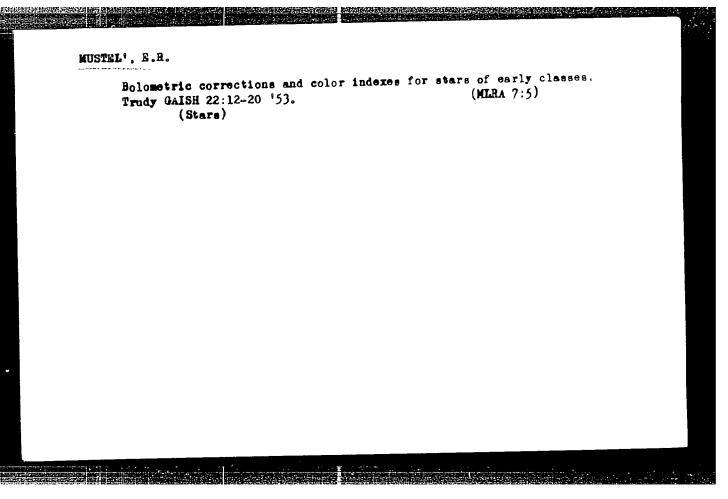
MUSTEL!, X. H.
Sun - Floccali
Physical nature of calcium flocculi. Izv. Krym. amorofiz. obser. No. 14.
Monthly List of Russian Accessions, Library of Congress
June 1953. UNCL.

considers main problem to be the source cenergy radiated by the floccules in the l. K. Ca-II and in the lines of the Balmer standing the lines Halpha and Hoeta, the r	of the lines H, series remaining
	ns). D18- nd energy 230751
may be the result of fluorescence processes in the chromosphere over the flares; or (b) the chromosphere over the flares is heated anomalously strongly (unusual increase in the kinetitemp of the chromosphere). Submitted by Acad G. A. Shayn 5 Nov 51.	processes in or (b) the sated anomal-in the kinetic tted by Acad



B). Submitted by Acad G. A. Shayn 52.	235T6	tronomy - Supernovae 21 Jum of the Origin of Supernova Explosions of the Origin of Supernova Explosions tell', Crimean Astrophys Obs, Acad Sustel', Crimean Astrophys Obs, Acad Sustel', Crimean Astrophys Obs, Acad Substitute and the masses of supernovae must reger than the masses of supernovae. Presence arguments for the possible presence asses in supernovae. States that fugations are needed on binary systems TCrB, by way of studies of position in the bands and lines of absorption in the content of the position of bands and lines of absorption in the content of the position of the pos
		ectra of repeated novae and dwarf class). Submitted by Acad G. A. May 52.





MUSTEL, E. R., GALKIN, L. S., KOPYLOV, I. ".

"Spectrophotometry of Gamma Cassiopeiae"
Izv. Krymsk. Astrofiz. Observ., 11, 1954, pp 59-73

A total of 12 spectrograms of gamma-Cas. obtained by means of the 1,200 mm reflectors of Grimea Observatory and the spectrograph construct d by V. A. Albitskiy are analyzed. Iron-arc spectrum was used for comparison. Microphotograms were obtained by self-recording Moll's microphotometer. Data are tabulated and compared with quantum number n of Balmer series. (RZhAstr, No 11, 15h)

So: W-31187, 8 Mar 55

TUSTFL E. A.

The Machanism of Glow of Tydrogen Flocculi. Tav. America y Astrofiz. Theor., 11, 1954, 102-128.

From continuations of previous investigations (ibid. 3(1952)) author concludes that the H lines delta, epsilon and zeta are not formed in the charm aphere, but in more deeply located layers. Thei alpha line is due to excitation of 1 by electron impact in the chromosphere and to recombination of protons with electrons. The decrement of Balmer lines in floccoli spectra and the whirls around apots are analyzed. (FZhAstr, No 3, 1754)

SO: 7-31128, 11 Jan 55

MUSTEL, E. R. and GALKIN, L.S.

"Study of Stars of Spectral Classes A and F With Anomalous Intensities of Metallic Lines" Izv. Krymsk, astrofiz. observ., 12, 1954, 148-161

The relatively small content of neutral and singly ionized atoms of some metals in "metallic" stars may be due to several causes: deviation from normal state, i. e., from the state to which most of the main sequence stars belong and anomalous excitation conditions, as producted by strong ultraviolet radiation fields, created by recombination of ionized H atoms. It is exhibited by the difference of profiles of Balmer series and confirms a real deviation of the chemical compound from that of main sequence stars. (RZhAstr, No 10, 1955)

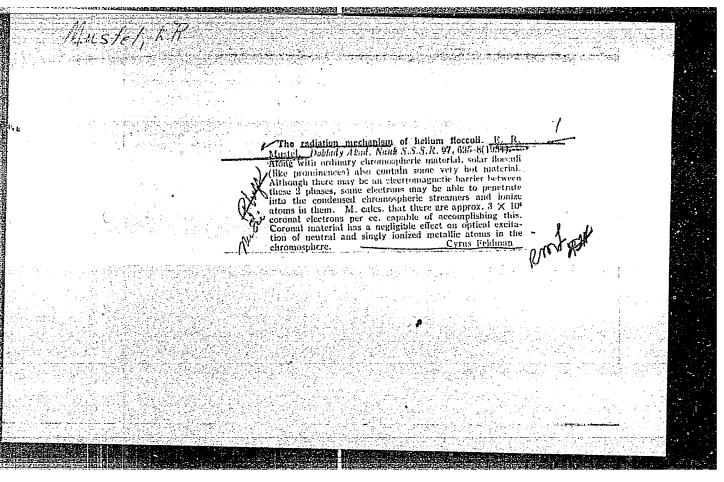
SO: Sum-No. 787, 12 Jan 56

MUSTEL, L.R.

"Problem of the Mechanism of Eurinosity of Flocculi in Lines F2 and Ca2," Izv. Erymsk. Astrofiz. Observ., 11, 1954, pp 165-169

The role of recombination in the brinosity of  $\rm H_2$  and  $\rm Ca_2$  lines in the steetra of flocculi is analyzed. Exterimental results coint to the conclusion that this luminosity is due not to recombination, but rather to electrom impact. (RCPAstr, No 2, 1955)

SO: Sum. No. 536, 10 Jun 55



BRODSKAYA, E.S.; SEVERNYY, A.B., doktor fiz.-mat.nauk, otv.red.;
SHAYN, G.A., akademik, red.; MUSTEL', E.R., red.; DOBRONRAVIN,
P.P., kand.fiz.-mat.nauk, red.; GUROV, K.P., red.izd-va;
POLYAKOVA, T.V., tekhn.red.

[Catalog of spectral classes, magnitudes, and color indices of 5752 stars in the area of the Milky Way with the center

h = 23 25 .  $\delta$  = 61 30 1 Katalog spektral nykh klassov. velichin i pokazatelei taveta 5752 zvezd v ploshchadke Mlechnogo Puti s tsentrom  $\alpha(=23^{h}25^{m})$ .  $\delta$  = 61 30 i. Moskva. Izd-vo Akad.nauk SSSR. 1955. 137 p. (Akademiia nauk SSSR. Krymskaia astrofizicheskaia observatoriia. Izvestiia, k.14). (MIRA 12:11)

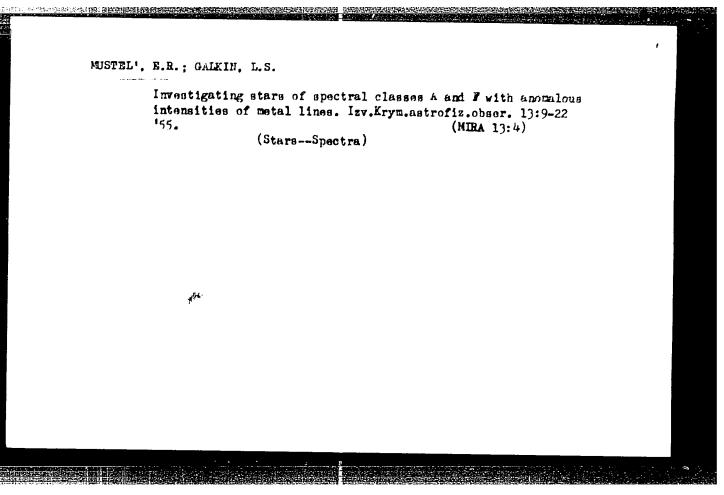
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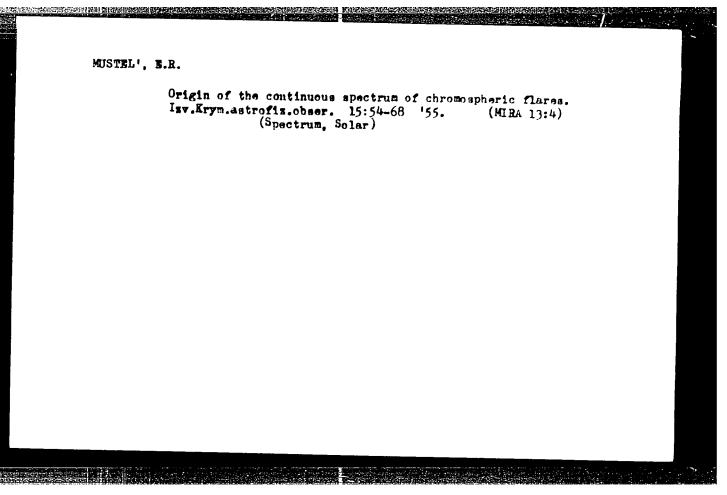
AMBARTSUMYAN, V.A., akademik, redaktor; MUSTEL', E.R., redaktor; PAREMAGO P.P., redaktor; KUKARKIN, B.V., doktor fisiko-matematicheskikh nauk; MARTYNOV, D.Ya., doktor fisiko-matematicheskikh nauk, redaktor; MASEVICH, A.G. kandidat fisiko-matematicheskikh nauk, redaktor; LEYKIN, G.A. kandidat fisiko-matematicheskikh nauk, redaktor; YEFREMOV, Yu.I., redaktor; POLYAKOVA, T.V., tekhnicheskiy redaktor.

[Transactions of the Fourth Conference on Problems of Cosmogony; non-stationary stars] Trudy chetvertogo soveshchaniia po voprosam kosmogonii; nestatsionnarnye svezdy. Moskva, Isd-vo Akademii nauk SSSR, 1955. 512 p. (MLRA 8:12)

- 1. Chlen-korrespondent AN SSSR (for Mustel' and Parenago)
- 2. Soveshchaniye po voprosam kosmogonii. 4th Moscow. 1954. (Stars)

		ny - Solar eclipse
Card 1/1		Pub - 124 - 4/45
Muthors		
<b>Titl</b> o	1	The physics of the sun
Periodical	•	Vest. AN SSSR 2, 25-32, Feb. 1955
Abstract		The preliminary results obtained by studying the total solar eclipse of June 30, 1954 are discussed. The urgent need for universal study of the sun in order to establish the connection between the activity of the sun and the pertinent changes occurring in the terrestrial atmosphere is emphasized. It is pointed out that the physical conditions of the external and internal sections of the sun do not remain constant but change periodically each 11 years. The maximum effect of these physical changes of the sun is felt mostly in the ionosphere which leads sometimes to sudden changes in the conditions of short wave radio communication, changes in the terrestrial magnetic field, and so forth.
Institution	•	
Submitted		



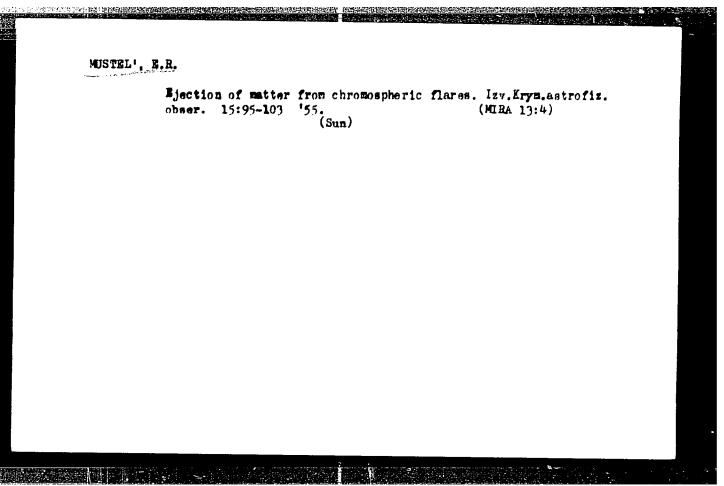


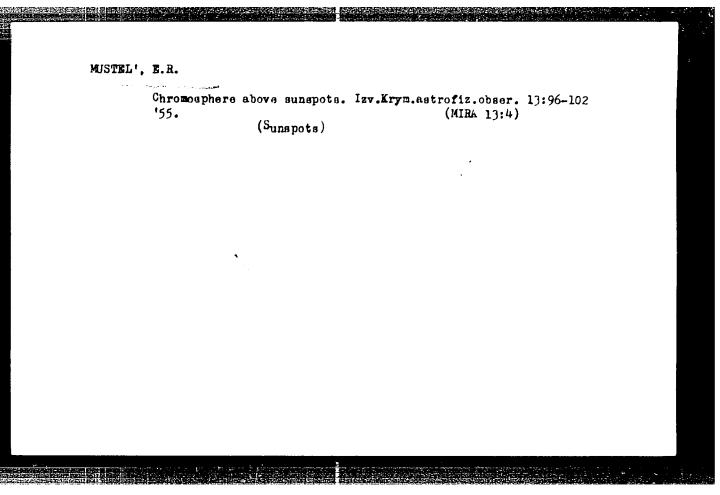
SEVERNYY, A.B.; MUSTEL', E.R.

Investigating the chromospheric flare of June 13, 1950. Izv.

Krym.astrofis.obser. 13:82-95 '55. (MIBA 13:4)

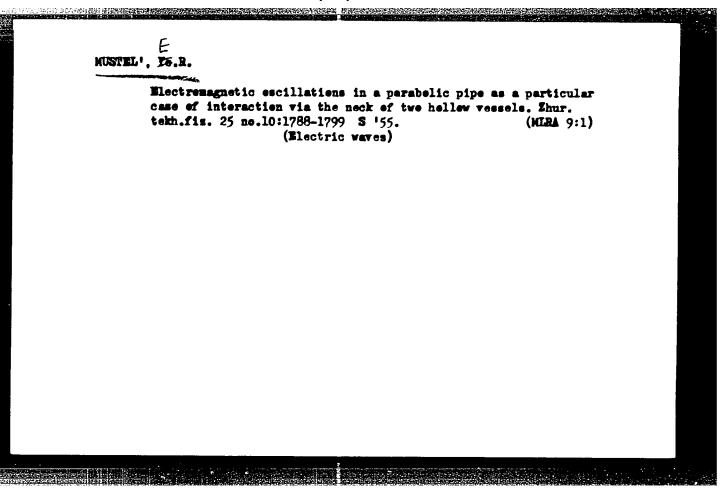
(Sun)



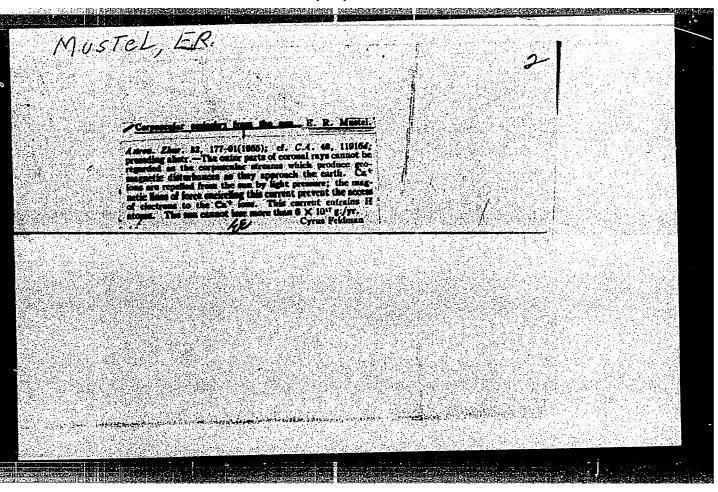


MUSTEL', E.R.; CALKIN, L.S.

Investigating A and F-type stars with anomalous intensities of metal lines, Part 3. Spectrophotometry of Castor B. Isv. Krym.astrofis.obser. 15:136-139 '55. (MIRA 13:4) (Stars--Spectra)



"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135730004-7



MUSTEL', E. R.

"On the Magnetic Fields of Naval and Supernaval," paper read at the Symposium on "lectromagnetic Phenomena in Cosmical Physics, Stockholm, 27931 Aug 56.

Sternberg Inst., Moscow

Mustin Ly to K.

"Study of the Physics of the Sun," (from the program of the International Geophysical Year), by E. R. Mustel', Corresponding Member of the Academy of Sciences USSR, Vestnik Akademii Nauk SSSR, No 11, Nov 56, pp 46-49

The article presents the scope of Soviet work on solar observations and studies in connection with the International Geophysical Year. Listed are a number of stations of the Solar Service of the USSR located in the Far East.

54M. 1305

MUSTEL', E.R.; TSAP, T.T.

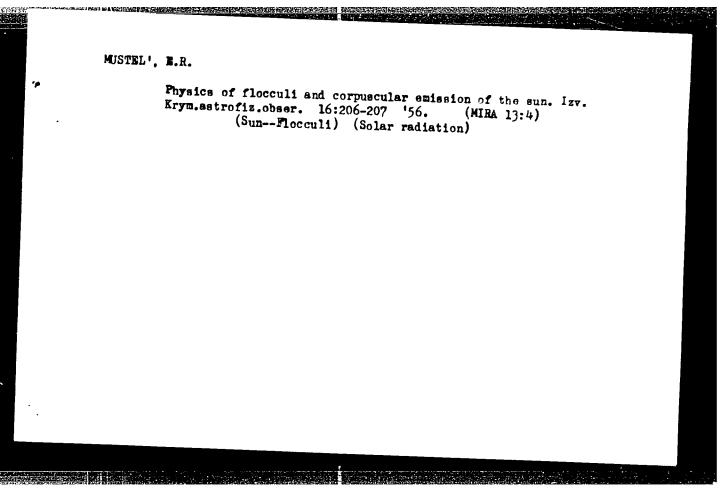
Spectrophotometry of lines of the infrared triplet of ionized calcium AA 8498, 8542, and 8662 in flocculi. Izv.Krym.
astrofiz.obser. 16:67-72 '56. (MIRA 13:4)
(Sun-Flocculi-Spectra)

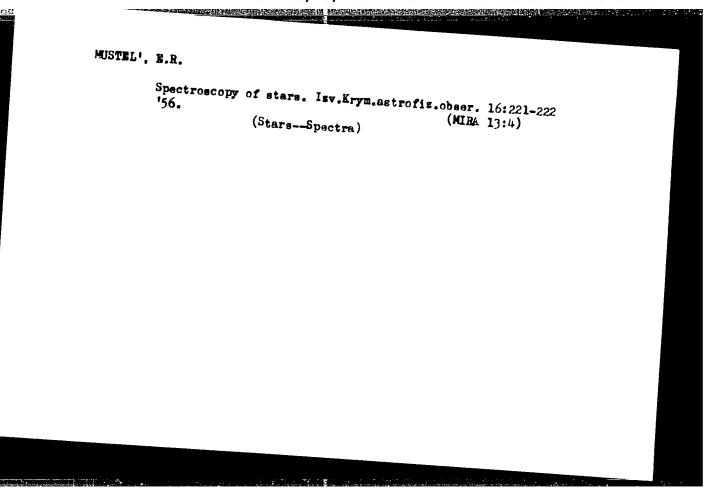
MUSTEL', E.R.; KUMAYGORODSKAYA, R.H.

Spectrophotometry of GO and KO-type stars with weak and strong lines. Izv.Krym.astrofiz.obser. 16:122-128 '56.

(MIRA 13:4)

(Stars-Spectra)





MINISTRAL	
KUSTEL', B.R.	
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Magnetic fields of novae. Astron. zhur. 33 no.2:182-294 Mr-Ap '56.	
1. Krymskaya astrofizicheskaya observatoriya Akademii nauk SSSR.  (Magnetic fields) (Stars, New)	
	Delokure

MUSTEL, E. R.

PHASE I BOOK EXPLOITATION

347

Mustel', Eval'd Rudol'fovic.

Solntse 1 atmosfera Zemli (The Sun and the Earth's Atmosphere) Moscow, Gostekhizdat, 1957. 101 p. 25,000 copies printed.

Ed.: Rakhlin, I. Ye.; Tech. Ed.: Pletneva, T. S.

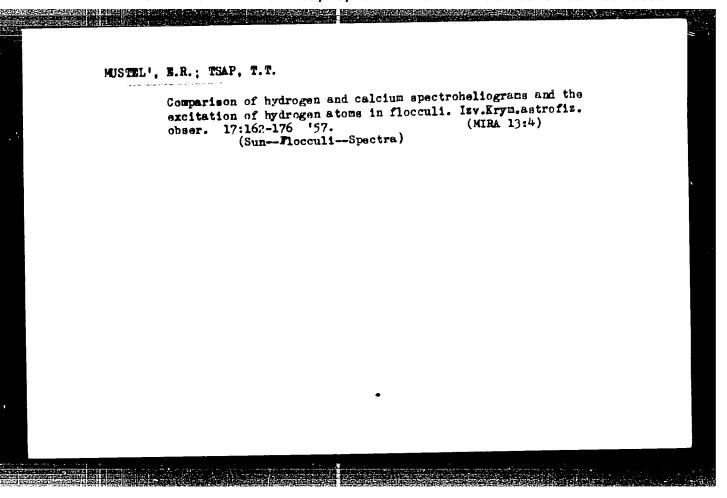
PURPOSE: The book is intended for students, teachers, and lecturers. It may prove useful to specialists in the field of radio communication and in the field of terrestrial magnetism.

The book contains a popular scientific account of the influence of the sun on the earth's atmosphere. The first part of the book is devoted to the description of the sun and of the processes occuring on its surface. The effect of ultraviolet and corpuscular solar emission on the upper layer of the earth's atmosphere is then disclossed. The study of these problems is important in the field of radio communication. A special section contains a short description of the known facts on the influence of the sun on the weather.

Card 1/3

The Su	n and the Earth's Atmosphere	
TI Oz Ge	the last part of the book is devoted to the study of solar influe the earth. This study was conducted during the International Sophysical Year. There are 3 references, all Soviet.	7 nces
1. 2.	The Importance of Studying the Sun	
	General Characteristics of the Sun and the Structure of the Su	n's
3. 4.	Solar Activity, Solar m	6
	the Upper Layer of the Earth Is and their Ferent	15
· ·	Layers of the Earth's Atmosphere and their Effect on the United	48
٥.	The Effect of Solar Activity on the Layers of the Earth's	69
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The Sun and the Earth's Atmosphere  7. Observing Solar Activity During year	347
	the International Geophysical 97
Recommended Literature	100
AVAILABLE: Library of Congress	102
Card 3/3 JS/	gm <sub>P</sub>
1	May 26, 1958



E

AUTHOR:

Mustel', Xe. R.

TITLE:

The physical nature of the differences between geomagnetic disturbances with sudden and non-sudden commencement. (O fizicheskoy prirode razlichiy mezhdu geomagnitnymi vozmushcheniyami s vnezapnym i postepennym nachalom).

PERIODICAL: Astronomicheskii Zhurnal, 1957, Vol.34, No.1, pp.120-126.

ABSTRACT:

Geomagnetic disturbances may be divided into two main groups: (i) disturbances with sudden commencement (SC), and (ii) disturbances with a non-sudden commencement (non-SC). There are considerable differences between these two groups. The following are some of them: (a) the distribution of the disturbances within a cycle of solar activity is quite different for the two groups; (b) the non-SC disturbances have a 27-day periodicity and are delayed with respect to the appearance of sunspots, whereas the SC disturbances follow the spots quite closely; (c) the duration of the non-SC disturbances may be up to 10 days, as opposed to 24-36 hours for the SC type. There are a number of other differences.

In the present paper the differences in the character of the corpuscular streams themselves are briefly considered.

Properties of SC disturbances indicate that they should be closely connected with sunspots. However, these destribances are not direct. / caused by the sunspots.

The physical nature of the differences between geomagnetic disturbances with sudden and non-sudden commencement. (Cont.)

in the case of strong geomagnetic disturbances, the strong chromospheric flares appear to cause the disturbances. The flares themselves are closely connected with the sunspots (1). Furthermore, observations of radio emission of the sun show that, during such strong flares, a flow of a disturbing agent takes place in the outward direction. Studies of this radio emission indicate that the atoms, of which the streams are probably composed, have a complex velocity spectrum. All this is connected with strong geomagnetic disturbances. In the case of moderate and weak disturbances the situation is more obscure. They could also be connected with flares but of smaller intensity.

Latest researches suggest that the ejection of atoms from intense chromospheric flares and the appearance of the flares themselves are a consequence of a specific complex non-stationary electromagnetic process. If the ejection of atoms from flares is caused by bright radiation, then the only mechanism which could be responsible for this is radiation pressure. It has, however, been shown in ref.(6) that this hypothesis meets with serious difficulties. Other, more serious difficulties are brought out by the study of the velocity spectrum of particles ejected from flares. These velocities are of the order of 1000 km/sec or more, so that radiation pressure cannot play a part in this process. If this is so, then it is quite possible that the suggested

The physical nature of the differences between geomagnetic disturbances with sudden and non-sudden commencement. (Cont.) non-stationary electromagnetic process is not always accompanied by a bright chromospheric flare, and the ejection of particles may take place in the absence of such flares, and vice versa.

The identical character of strong and weak SC-disturbances shows that in all cases of ejected corpuscules one deals with the same non-stationary electromagnetic process as when bright flares are present. It follows that areas at which specific non-stationary phenomena occur, together with an increase in radio emission and a shift of the level of radio emission in the corona, should be the sources of particles which cause SC disturbances. It is conjectured that these areas should have an unstable character and be somehow connected with sunspots.

Disturbances with non-SC characteristics are, in the author's opinion, caused by flocculi. This is confirmed by the fact that the passage of flocculi through the centre of the sun's visible disc is accompanied by geomagnetic disturbances. (Refs. 7,8,9). The author also considers that the difference in the character of SC and non-SC disturbances conditioned by physical (rather than geometrical) characteristics of the corresponding streams. Observations

The physical nature of the differences between geomagnetic disturbances with sudden and non-sudden commencement. (Cont.)

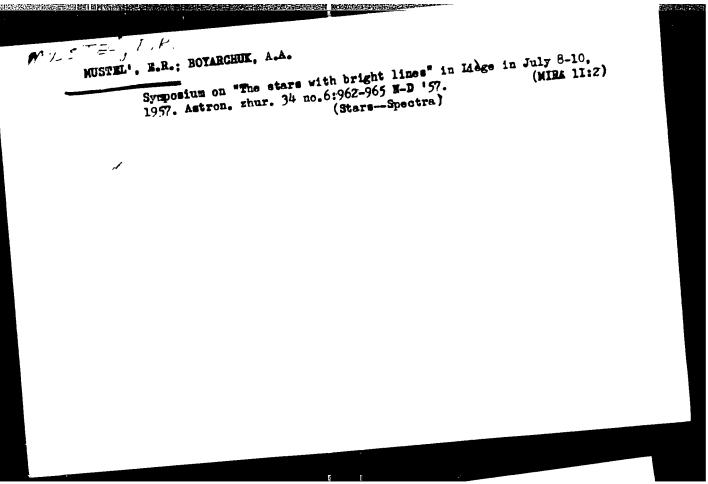
have established that the velocity v of condensations in streams giving rise to SC disturbances is higher than the velocity in the streams giving rise to non-SC disturbances.

If one takes a simple model for the first phase of geomagnetic disturbances, in which losses of kinetic energy of the particles in the stream cause changes in the magnetic field H of the Earth, the rate of change of this field dH/dt is proportional to nv2, where n is the concentration of the atoms in the stream at the distance of the Earth from the Sun. This shows that the rate of change dH/dt should be higher for streams giving rise to SC-disturbances (higher velocity).

In addition, condensations ejected from the region of sunspots and causing SC disturbances, have their own considerable "frozen" magnetic field. This should also cause additional variations in the Earth's magnetic field. Considerations show that the field of the condensations, causing non-SC disturbances should be much smaller. 1 Figure, 13 references, 5 of which are Russian.

Crimea Astrophysical Observatory Ac.Sc. USSR.

Recd. Nov. 1, 1956.



MUSTEL, E. R. (Prof.)

"Corpuscular streams for the plages and the physical properties of the streams,"

"Corpuscular streams for the plages and the physical properties of the streams,"

"Description of the plages and the physical properties of the streams,"

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MUSTEL', M.R.; DVORYASHIN, A.S.

Solar activity and geomagnetic disturbance from 1942-1944 [with Solar activity and geomagnetic disturbance from 1942-1944 [with sureary in English]. Astron. shur. 35 no.1:3-17 Ja-F '58.

(MIRA 11:3)

1. Krynskaya astrofizicheskaya observatoriya AN SSSR.

(Sun-Flocculi) (Magnetic storms)

sov/33-35-2-2/21 Mustal R., and Mitropol'skaya, O.N. Flocculi (Plages) and the Twenty-Seven Day Recurrence Tendency in Magnetic Disturbances (Flokkuly i dvadtsatisemidnevnaya 3(1) AUTHORS: povto yayemost' geomagnitnykh vozmusheheniy) PERIODICAL: Astronomicheskiy zhurnal, 1958, Vol 35, Nr 2, pp 194-207 (USSR) TITLE:

ABSTRACT:

The present paper is a continuation of the preceding publications Ref 1,2 and contains a comparsion of the 27 day sequences of geomagnetic disturbances during the years 1929 - 1933 and the flocculi. The authors used the Meudon and Zürich synoptic maps, observations of the Coimbra and Ebro Observatory as well as the K-indexes of N.P. Ben'kova. The result of the investigation is the assertion that all 11 considered sequences of geomagnetic disturbances can be combined in a natural manner with the passage of the flocculi across the visible center of the solar disk. Some corrections concerning this assertion are already mentioned in [Ref 1] and [Ref 2].

Card 1/2

AUTHOR:

33-35-3-5/27

TITLE:

Corpuscular Streams During the Years of Minimum Solar Activity and Their Properties (Korpuskulyarnyye potoki v gody minimuma solnechnoy aktivnosti i ikh svoystva)

PERIODICAL:

Astronomicheskiy zhurnal: 1958, Vol 35, Nr 3, pp 351-365 (USSR)

ABSTRACT:

At the beginning of the paper the main former results of the author and others [Ref 1 - 4] are summarized. In these investigations it has been shown that practically all separate geomesnetic disturbances and sequences of disturbances during the years of minimum solar activity are caused by plages which pass over the visible center of the solar disk and that therefore the corresponding corpuscular streams from plages are approxi-

The problem of the velocity of corpuscles from plages is discussed. These velocities v are found from the time-lag At of the disturbances (see fig. 1). From [Ref 2 - 4] it follows that statistically the value of v decreases with the phase of the solar cycle in the direction towards the minimum of solar a. tivity. At moments close to the minimum activity (though before minimum) the mean velocities of the corpuscles are very small, of the order of 200-300 km/sec. Simultaneously with the de-

Ce.rd 1/5

Corpuscular Streams During the Years of Minimum Solar

33-35-3-5/27

Activity and Their Properties

crease of  $\upsilon$  and therefore with the increase of  $\Delta t$  towards minimum activity, the mean duration of the disturbances AT statistically increases; during the years of minimum activity AT amounts to 10-15 days & Such large values of AT cannot be the result of a large sclid angle of the corpuscular streams, as it is just during the years of minimum activity that the radiality of the streams is maximum [Ref 5, 2-4]. The simultaneous increase of At and AT and the large values of AT - all this is naturally explained by the dispersion of velocities in the stream and by the specific form of the dependence between Lit and . (see fig 1). For one and the same value of the dispersion of velocities  $\Delta p$  in the stream, the value of AT increases rapidly with the decreasing > and therefore with the increasing At. For example, if for all the streams  $\Delta_{3} \approx 100 \text{ km/sec}$  then for  $\omega = 1000 \text{ km/sec}$  the value  $\Delta T$  will be equal to only nine hours, for  $p=250 \text{ km/sec} \triangle T$  will be more than seven days. Therefore the increase of AT with At is the result of the velocity dispersion of the corpuscles in the stream and the decrease of the mean velocities of the cor-Attended to the fact that often the range of varia-

Card 2/5

CIA-RDP86-00513R001135730004-7

Corpuscular Streems During the Years of Minimum Solar Activity and Their Properties

**33-**35-3-5/27

tions of the magnetic field during a long disturbance (with a large  $\Delta$  T) remains constant or decreases but very slightly towards the end of the disturbance. But it is difficult to understand this if the main energy of the corpuscles is their kinetic energy, and a velocity dispersion in the stream is present. In connection with this the main conclusion of the present inwestigation is made: in many cases the energy of the "frozen-in" magnetic field of the corpuscular condensations can considerably exceed their kinetic energy. This conclusion is confirmed by quantitative estimates according to formulae (1) and (2). It is indicated that the existing estimates of the strength of the frozen-li magnetic field, made on the basis of the study of variations of coamic rays assuming a homogeneous structure of the streams [Ref 10], wast be resocaldered because corpuscular streams consist in reality of separate relatively deuse equiensations. It seems that the strength of the "frozen-4x" field of the condensations which give rise to disturbances with a row-sudies exame sement amounts to 5.10-4 oersted and the strength or the field of concensations which cause disturbances with a sudden commencement amounts to 10-2 pershed. It is possible that the presence of a noticeable magnetic field in corposoniar condensations might explain the large sacelers if me which are fined from the motion of ionized molecules, My and Card 3/5

Corpuscular Streams Darding the Years of Minimum Solar Activity and Theli: Priparties

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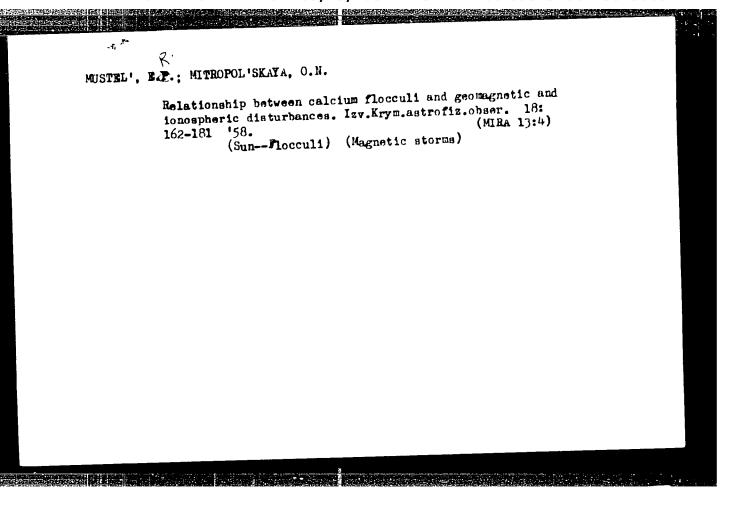
energy can vary from one stream to another and the winetic condensation to such as a vary from one stream to another and the condensation to often the mother. This might explain the last of variables. The possible served termen isomspheric and gernagnetic disturbances. The possible served termen isomspheric and gernagnetic disturbances. The possible explanation of morphisms for studying this question outcomessed and the main observational problems for studying this question outcomessed and the main observational problems for studying this question outcomessed and the main observation of the distribution of geomagnetic disturbances lines. A possible explanation of the distribution of geomagnetic disturbances with sudden and no condensation commenteness in the solar cycle [Ref 21] is given.

With sudden and no condition of the "normal" hypothesis are critically disturbed. In conduction some questions of the "normal" hypothesis are critically disturbed. In edition to the sire day discussed difficulties which this hypothesis mests [lef 3], the difficulties are a ted. In particular, the statistical mests [lef 3], the difficulties are a ted. In particular, the statistical results derived by W. Freeder [Ref 31] are considered. The subther slows than the 1- and 2-corress constructed by Roberts and Pecker are not at all all and 2-corress constructed by Roberts and Pecker are

Card 4/5

MUSTEL', E.R.; GALKIN, L.S.; KUMAYGORODSKAYA; BOYARCHUK, M.Ye.

Quantitative spectral classification of FO-E5 stars with
Quantitative spectral classification of FO-E



X

83799 s/035/59/000/003/005/039 A001/A001

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1959, No. 3, p. 28, # 1887

AUTHOR:

Mustel', E. R.

TITLE

The Problem of Outflow of Substance from Stationary Stars

PERIODICAL:

Izv. Krymsk. astrofiz. observ., 1958, Vol. 19, pp. 153-164

(English summary)

The problem is discussed on calculating the mass lost ty the Sun yearly as a result of corpuscular radiation. Arguments are adduced that the mass value amounts to 10<sup>18</sup> g/year. The consideration of the mechanism of matter ejection from the solar surface emphasizes the difficulties of studying mass losses by other stationary stars. It is suggested to base the estimates of the secular mass losses of these stars on the studies of effects caused by the ejected substance in the star surrounding space. The author considers the possibility of detecting the matter outflow from stars by studying emission lines in their spectra, in particular the Hg line. It was found that the Hg line is too weak for detecting the effect in question. An other possibility is pointed

Card 1/2

s/035/59/000/003/005/039 A001/A001

The Problem of Outflow of Substance from Stationary Stars

out, when the outflow of matter from a star proceeds into a diffuse nebula. In this case a shell should form which expands under the action of corpuscles ejected from the star surface and braked by the shell. The mass of the shell will increase both on account of the matter outflowing from the stellar surface and captured by the shell and on account of the nebular substance carried along by the shell during its expansion. The equation of motion of such a shell is composed which looks as follows:

 $\frac{d^{2}R_{a}}{dt^{2}} = \frac{4 \operatorname{T} R_{o}^{2} \rho_{o} (v_{o} - v_{a})^{2} - 4 \operatorname{T} R_{a}^{2} \rho_{c} v_{a}^{2}}{m_{o} + 4 \operatorname{T} R_{o}^{2} \rho_{o} [v_{o} t - R_{a} + R_{a}] + \frac{4}{3} \operatorname{T} \rho_{c} (R_{a}^{3} - R_{a}^{3})}$ 

where R is shell radius,  $v_a$  its velocity, R<sub>o</sub> is radius of a sphere beyond which the gravitation of the star may be neglected;  $v_o$  is speed of the atoms ejected from the star at R = R<sub>o</sub>;  $\rho_o$  is matter density at the R<sub>o</sub> level;  $\rho_o$  is interstellar medium density. The solution of this equation is supposed to be given by the author in an other article.

Translator's note: This is the full translation of the original Russian abstract,

Card 2/2

MUSTEL', E.R.; TSAP, T.T.

Spectrophotometry of the three infrared lines of ionized calcium

A 8498, 8542, 8662 in floccult. Part 2. General characteristic properties of lines of the infrared triplet in spectra of flocculi and aunspots. Isv. Krym. astrofiz. obser. 20:74-79 '58.

(Sun-Flocculi-Spectra)

(Sunspots-Spectra)

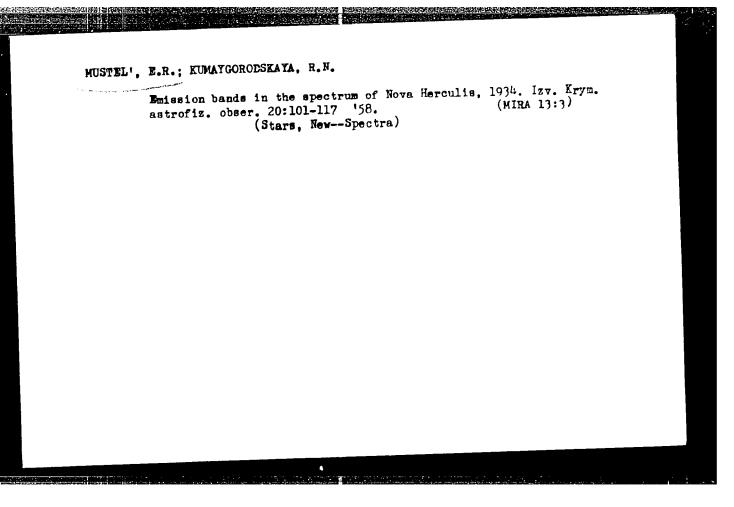
MUSTEL', E.R.; BOTARCHUK, M.Ye.

Absorption spectrum of Nova Herculis, 1934, at its maximum.

Isv. Krym. astrofiz. obser. 20:86-100 '58.

(MIRA 13:3)

(Stars, New-Spectra)



PARIYSKIY, M.B., kand. fig.-mat. neuk.otv. red.; KOMONOVICH, E.V., red.; KUZ'NIN, A.D., kand. tekhn. nauk.red.; MOGILEVSKIY, E.I., kand. fiz.-mat. neuk. red.; MUSTEL! E.B., red.; YEGOROVA, M.B., red. izd-va, KASHINA, P.S., tekhn. red.

[Total solar eclipses of February 25, 1952 and June 30, 1954;

[Total solar eclipses of February 25, 1952 and June 30, 1954; proceedings of the expedition] Polnye solnechnye satmeniia, 25 fevralia g. i 30 iiunia 1954 g.; trudy ekspeditaii. Hoskva, 1958, 357 p. (MIRA 11:12)

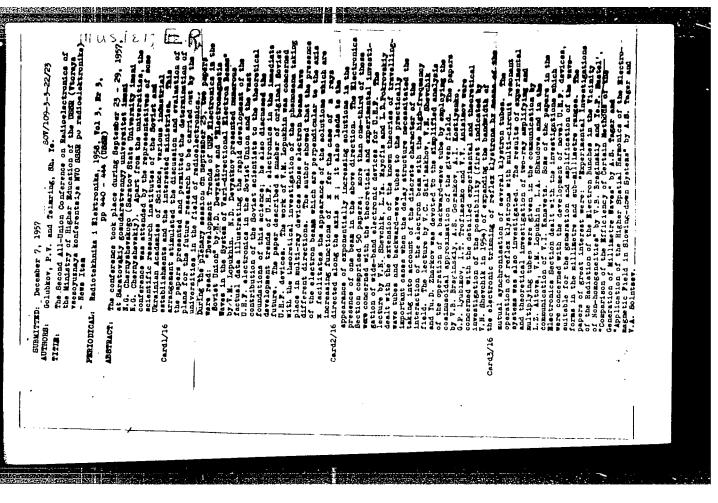
1. Akademiya nauk SSSR. Ekspeditsiya po nablyudeniyu polnykh solnechnyik zatmeniy. 1952 i 1954. 2. Chlen-korrespondent Ali SSSR(for Mustel').

(Eclipses, Solar)

BRAGINSKIY, V.B.; MUSTEL', Ye.R.

Experimental investigation of the radiation by electron lumps in the natighborhood of inhomogeneities. Izv.vys;ucheb.zav.; radiofiz. 1 no.3: 124-127 '58.

1. Moskovskiy gosudarstvennyy universitet. (Microwaves)



MUSTEL . E.R., otv.red.; SILKIN, B.I., red.; YEGOROVA, N.F., tekhn.red.

[Observations of the sun] Nablindeniis solntsa. Moskva, Izd-vo Akad.nauk SSSR, 1959. 37 p. (MIRA 13:1)

1. Russia (1923- U.S.S.R.) Mezhduvedomstvennyy komitet po provedeniyu Merhdunarodnogo Geofizicheskogo Goda. 2. Chlenkorrespondent AN SSSR (for Mustel!). (Sun--Observations)

2

3(1) AUTHORS:

sov/33-36-1-3/31 Mustel', E.R., and Mitropol'skaya, O.N.

TITLE:

On the Velocity Spectrum of Corpuscles in Solar Corpuscular

PERIODICAL: Astronomicheskiy zhurnal, 1959, Vol 36, Nr 1, pp 5-16 (USSR)

ABSTRACT:

During 1951-1953 the velocity spectrum of corpuscles ejected from flocculi was investigated. Under the assumption that the velocity spectrum of corpuscles ejected from every point of the given flocculus is the same, the velocity v, of the fastest

corpuscles and the velocity  $\mathbf{v}_2$  of the slowest corpuscles and the total range of velocities  $\Delta v = v_1 - v_2$  was derived. The method of

Basing on these results the connection of flocculi with geomagnetic activity established in a previous paper / Ref 6 7 was revised. The passage of floculi over the visible center of the solar disk explains not only the rise of disturbances but also the appearance and disappearance of geomagnetic sequences during the appearance of new floculi and correspondingly the disappearance of old floculi, and further the appearance, disappearance, strengthening and weakening of geomagnetic sequences

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On the Velocity Spectrum of Corpuscles in Solar SOV/33-36-1-3/31 Corpuscular Streams

during the change of sign of the heliographic latitude B<sub>0</sub> of the disk's center. The paper contains an extensive discussion of the results and a number of conclusions. Of the results and a number of conclusions. There are 2 figures, and 19 references, 12 of which are Soviet, 4 American, 2 English, and 1 French.

ASSOCIATION: Astronomicheskiy sovet Akademii nauk SSSR (Astronomic Council AS USSR)

SUBMITTED: November 3, 1958

card 2/2

3(1), 3(6)Mustel', E.R. ::ov/33-36-2-3/27

AUTHOR: TITLE:

Statistical Effects Due to the Connection Between F

Geomagnetic Disturbances

PERIODICAL:

Astronomicheskiy zhurnal, 1959, Vol 36, Nr 2, pp 215-223 (USSR)

ABSTRACT:

The author investigates the statistical effects resulting from the connection between florali and geomagnetic disturbances, established by him in / Ref 4 7. The main results of the detailed investigation are as follows: a) Hocculi, which at the moment of CMP are near the center of the solar disk, are the principal source of M-disturbances. b) Active regions have in reality a tendency to be located frequently in two longitudinal zones divided by an interval  $\Delta L > 100^{\circ}$ . - The author mentions O.N. Mitropol'skaya. - There are 4 figures, and 17 references,

9 of which are Soviet, 4 American, and 4 English.

ASSOCIATION: Astronomicheskiy sovet Akademii nauk SSSR (Astronomical

Council AS USSR)

SUBMITTED:

January 27, 1959

Card 1/1

sov/20-128-2-12/59

3(1)

Mustel', E. R., Corresponding Member, AS USSR

AUTHOR:

On the Main Source of Solar Corpuscular Currents

TITLE:
PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 2, pp 265-268

(USSR)

ABSTRACT:

The author first reports on various articles previously published on this subject. M-Disturbances are the main geomagnetic disturbances with respect to the number and, particularly, to the period assumed by them throughout the solar cycle. From the practical standpoint, the particle currents producing these disturbances are the principal kind of currents which disturb radiocommunication on short waves, produce aurorae boreales, rediocommunication on short waves, produce aurorae boreales, etc. When entering into details of this problem, the mechanism of the emission of corpuscules from the flocculi is to be dealt with. This is the very problem that is investigated here in more detail. In the projection toward the sun's ed here in more detail. In the boundaries of the flocculus approximately coincide with the boundaries of the bright corona proximately coincide with the boundaries of the bright corona ly important - with the boundaries of the bipolar (or unipolar)

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On the Main Source of Solar Corpuscular Currents

SOV/20-128-2-12/59

magnetic range. Thus, the problem is raised which of these three kinds of solar activity produces the emission of corpuscles: the floccular emission, the corona over the flocculus, or the local magnetic field over the active zone. According to observations, obviously the last factor is the essential one, i.e. the magnetic field. This is confirmed by the fact that in many cases the flocculus disappears before the long geomagnetic sequence of flocculi which it has produced. However, this sequence exists for two or three other rotations without being accompanied by any visible (optical) phenomena of solar activity on the corresponding longitude. The local magnetic field, however, shows normal behavior. After the disappearance of all "optical" kinds of solar activity (flocculus spots, bright corona radiation, etc), the bipolar magnetic field that had existed there so far is replaced by a unipolar field, which is then observable during some rotations. The following conclusions may be drawn herefrom: The emission of particles from the active zone is really determined by its magnetic field, and the last members of the geomagnetic sequences (which are observable without the existence of flocculi and a bright corona at  $\lambda = 5303$  Å) are conditioned by unipolar

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On the Main Source of Solar Corpuscular Currents

SOV/20-128-2-12/59

magnetic zones. This conclusion is obviously confirmed by a direct comparison of geomagnetic disturbances with flocculi and the local magnetic zones on the sun. According to the conclusions drawn in this article, the projection of corpuscles is determined only by the existence of a local magnetic field within the active zone, i.e. irrespective of its nature (bipolar or unipolar) and sign. However, the diamagnetic mechanism is not the only solution possible for this problem. In conclusion, the author points out several facts and factors which are important in this connection. There are 17 references, 12 of which are Soviet.

ASSOCIATION:

Astronomicheskiy sovet Akademii nauk SSSR (Astronomical

Council of the Academy of Sciences, USSR)

SUBMITTED:

June 5, 1959

Card 3/3

S/035/60/000/009/006/016 A001/A001

3,1560

Referativnyy zhurnal, Astronomiya i Geodeziya, 1960, No. 9 Translation from: pp. 31-32, # 8838

AUTHOR:

Mustel, E.R.

TITLE:

The Problem of Outflow of Substance from Stationary Stars. Part 3. A Study of the Shell Created by the Star Corpuscular Emission

V-

PERIODICAL:

Izv. Krymsk. astrofiz. observ., 1959, Vol. 21, pp. 24-39 (Engl.

summary)

The results are presented of the numerical solution of motion of a shell created by the corpuscular emission of a star, which is expanding in inter-TEXT: stellar medium. The equation proper was derived by the author earlier (RZhAstr, 1959, No. 3, # 1887). Solutions of the equation are found for a number of variants, corresponding to various parameter values, by means of a high-speed electronic computer "Strela". The results are tabulated and presented graphical. ly. The question is discussed on visual effects which can be produced by the shell under consideration. The calculations show that the shell should be ob-

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CIA-RDP86-00513R001135730004-7" APPROVED FOR RELEASE: 03/13/2001

S/035/60/000/009/006/016 A001/A001

The Problem of Outflow of Substance from Stationary Stars. Part 3. A Study of the Shell Created by the Star Corpuscular Emission

servable. Moreover, the shell should deform or destroy the fields of HII around 0- and B-stars. The visual effects mentioned are not observed. In this connection, the author holds that the results of this study indicate the absence of intense outflow of gases from the surfaces of hot stars, including Wolf-Rayet stars. This conclusion is of a preliminary nature.

I.N. Minin

Translator's note: This is the full translation of the original Russian abstract.

Cari 2/2

84574

s/035/60/000/009/007/016 A001/A001

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1960, No. 9.

pp. 34-35, # 8853

Mustel', E.R., Boyarchuk, M.Ye.

On Chemical Composition of the Atmosphere of N Her 1934 AUTHORS:

Izv. Krymsk, astrofiz, observ., 1959, Vol. 21, FF. 3-23 (Engl. TITLE: PERICDICAL:

The chemical composition of the N Her 1934 atmosphere is determined for the maximum brightness instant, as well as that of 7 comparison stars: x, Cyg A21a, 6 Del A7III, 7Her A9III, V Her F2II, HD 110628 F 2III, 41 Cyg F5II and 7Cyg F8It. The method of growth curves was employed. Spectrograms taken with the 10 telescope of the Simeiz Observatory with a dispersion of 36 A/mm for H  $\gamma$  were used. The comparison of the chemical composition of N Her 1934 with the average "stand." and" chemical composition reveals large anomalies in the content of C, N, O in the atmrsphere of the Nova. The content of these elements in the N Her atmosphere is about 103 as great as in the "standard" composition. This result can not be explained by peculiarities in the conditions of atom excitation. The region of the

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29(0)

SOV/25-59-2-2/48

AUTHOR:

E.R. Corresponding Member of A3

of USSR

TITLE:

A New Planet of the Solar System (Novaya

planeta solnechnoy sistemy)

PERIODICAL:

Nauka i zhizn', 1959, Nr 2, p 2-6 (USSR)

ABSTRACT:

The article deals with a series of problems, the solution of which now seems possible due to the launching of the Soviet sun satellite on 3 January 1959. Such problems are the influence of the magnetic fields of corpuscular radiation on the intensity of cosmic rays, the interaction of corpuscular rays and interplanetary gas and dust (highly important for the study of disturbances of radio communication in higher latitudes), and the characteristics and composition of interatellar matter. In order to resolve such published,

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various devices such as counters of charged

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A New Planet of the Solar System

moon and to measure from various distances the magnetic storms, and the aurora polaris. For the study of meteors, two ballistic piezoelectric counters of ammonium phosphate were installed on the shell of the space rocket (photo Nr 2). Those counters recorded the impacts of micrometeoric particles. There are 4 photos, 1 diagram and 1 chart.

Card 3/3

3(0)

SOV/30-59-8-32/56

AUTHORS:

Mustel', E. R., Corresponding Member, Academy of Sciences, USSR, Yegorova, N. B.

TITLE:

Solar Studies and the Tasks of Geophysics

PERIODICAL:

Vestnik Akademii nauk SSSR, 1959, Nr 8, pp 87-89 (USSR)

ABSTRACT:

po issledovaniyu Solntsa pri Astronomicheskom sovete Akademii nauk SSSR (Commission of Solar Studies of the Astronomy Council of the Academy of Sciences, USSR) was held in Leningrad. It was devoted to the discussion of essential questions of solar physics and the effect of its processes upon geophysical phenomena. The main task of the meeting was the development of research projects aimed at the study of the connection between solar and terrestrial phenomena in accordance with the astronomical and geophysical data furnished by the Inter-

From May 18 to 22 an extended plenary session of the Komissiya

national Geophysical Year. In addition, the following papers were read: E. R. Mustel' and collaborators of the Crimean Astrophysical Observatory reported that the flocculi were one of the foremost sources of the corpuscle outburst of the sun, as was confirmed by statistical investigations carried out by O. N. Mitropol'skaya. S. K. Vsekhsvyatskiy assumes that

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Solar Studies and the Tasks of Geophysics

SOV/30-59-8-32/56

the source of corpuscles is to be found in the corona of the sun. V. V. Vitkevich reported on observations of the "supercorona" of the sun. M. S. Bobrov reported on the findings of research into the structure of corpuscle currents. M. N. Gnevyshev reported on the relationship between the solar coronary radiation and the magnetic storms on the earth. N. A. Savich confirmed the fact that the X-rays of the chromosphere explosions were to be considered the cause of the sudden storms in the ionosphere. V. I. Krasovskiy, I. S. Shklovskiy, Yu. I. Gal'perin, Ye. M. Svetlitskiy reported on the force and the energetic spectrum of the corpuscles in the upper atmosphere on the basis of the data obtained by the third artificial Soviet earth satellite. B. M. Rubashev, L. A. Vitel's, M. S. Eygenson, T. L. Mandrykina and G. N. Rodionov spoke on the statistical interdependence between the oscillations of solar activity and the state of the troposphere. A. B. Severnyy and N. V. Steshenko discussed questions of solar physics. V. Ye. Stepanov reported on movements in various parts of the chromosphere. M. Z. Khokhlov reported on the finding of the forces of the oscillators of some lead lines and the lead content of the sclar atmosphere. M. Kerimbekov spoke on filming the granulation. V. A. Krat reported on the physics

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Source of corpuscules creating the M perturbations. no.213:5-8 J1 *60;		Astron.tsir. (MIRA 14:1)
1. Astronomicheskiy sovet AN SSSR. (Magnetic storms)	(Suh)	•

9082<del>6</del>

3.9100 3.1550 S/033/60/037/02/002/013 E032/E914

AUTHOR: Mustel', E. R.

TITLE: The Total Energy Contained in Corpuscular Streams.

PERIODICAL: Astronomicheskiy zhurnal, Vol 37, Nr 2, pp 210-221 (USSR) 1960.

ABSTRACT: (For previous papers see Refs 1-5). Further arguments are given in favour of the hypothesis that in many cases a considerable fraction of the total energy in corpuscular streams emitted by the sun is determined by the magnetic field "frozen" in the condensations and not by the translational kinetic energy of the particles. A preliminary discussion of this problem was given by the present author in Ref 1. In the present paper that discussion is amplified and only M-disturbances are considered. It is argued that the long period of geomagnetic disturbances at the end of a sun spot cycle is due to particles, which at that time have small velocities, and not to after-effects in the Earth's atmosphere. The 'flat top' disturbances (Fig 1) which are often observed at this time, and irregular var-

Cardl/4 iations in the magnetic field are reconsidered. It is shown

S/033/60/037/02/002/013 E032/E914

The Total Energy Contained in Corpuscular Streams

again that the most probable explanation of these disturbances is that the energy density of the "frozen-in" magnetic field is much greater than the kinetic energy (Eq 5), or at least that the kinetic energy is just less than the magnetic energy. On the way from the sun to the Earth, the corpuscular condensations should expand because of internal magnetic pressure, so that the magnetic density energy should decrease in each of the condensations. If the rapid expansion process is not concluded before the condensations reach the Earth, then condensations producing the end of the disturbances (and taking more time to reach the Earth) should on the average have a smaller magnetic energy density than the condensations causing the beginning of the disturbance. It would therefore be expected that quite frequently the amplitude of the magnetic field variations should increase towards the end of the disturbance and this is in

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S/033/60/037/02/002/015 E032/E914

The Total Energy Contained in Corpuscular Streams

fact observed. Occasionally, long period M-disturbances contain more energy than disturbances with a small AT Two factors may play an important role here. At the end of the solar cycle, when large AT are observed, the structure of the corpuscular streams should be particularly simple and the magnetic lines of force in the condensations are not as entangled as they are otherwise. Therefore, the efficiency of interaction between the condensations and the Earth's magnetic field should in such cases be a maximum. On the other hand, disturbances with large  $\Delta T$  correspond to small particle velocity, and this means that the time of interaction between a condensation and the Earth's magnetic field should be longer than for disturbances with a small Both these factors naturally explain the absence of a close connection between the intensity of a plage and the corresponding magnetic disturbance, provided it is assumed that the magnetic energy density is much smaller than the translational kinetic energy density. In conclusion, the

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S/033/60/037/02/002/013 E032/E914

The Total Energy Contained in Corpuscular Streams

role of the "frozen in" magnetic field in corpuscular streams from chromospheric flares is briefly considered. The presence of this field may explain some of the important properties of the main phase of SC-disturbances. In particular, this may have a bearing on the slow recovery of the Earth's normal field after a rapid decrease in the horizontal component. Thus if there is a velocity spread in the stream due to a chromospheric flare, the beginning of the disturbance corresponds to the faster particles. It follows that, owing to the expansion effect, the kinetic and magnetic energy densities will be greater at the beginning of the disturbance than at the end. There is 1 figure and 16 references, of which I is Swedish, 2 English and 13 Soviet.

ASSOCIATION: Astronomicheskiy sovet Akademii nauk SSSR (Astronomical Institute Academy of Sciences USSR)

SUBMITTED: December 8, 1959.

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APPROVED FOR RELEASE: 03/13/2001

3.9100 3.1540

81833

8/033/60/037/03/001/027 E032/E314

AUTHOR: TITLE:

Mustel', E.R.

On the Existence of a General Field of Corpuscles Emitted by the Sun 1/

PERIODICAL: AST (USSR) Astronomicheskiy zhurnal, 1960, Vol 37, No 3, pp 396-402

> projection on the solar disc the same heliographic coordinates and differ ( in the sense of localisation)

ABSTRACT: It has been argued (the author et al - Refs 1-7) that the main source of corpuscles producin. M-disturbances are active regions of the Sun. In most of these papers use was made of calcium plages. The reasons for this is that the Ca<sup>+</sup> emission is the most easily recorded. It also gives the best definition of the outer contours of an active region. In general, the three most stable elements which characterise each active region during its development are floccular emission, 2) enhanced coronal emission in  $\lambda$  5503, and 3) local magnetic field which is first bipolar and then, towards the end, unipolar. The local magnetic field is the most stable element of an active region and apparently determines the process of ejection of corpuscles. All the three elements have in

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On the Existence of a General Field of Corpusties Emitted by the Sun

only in altitude. Thus, coronal emission takes place at a higher level than chromospheric emission, and so on. All this means that the instant of passage of an active region. through the Central Meridian should turn out to be the same. whichever of the above three elements is used to determine this instant. Bearing this in mind, the following defintion of a source of M-corpuscles can be given. Almost every active region (including the  ${rac{U}{V}}$  phase), even when there is no chromospheric emission and radiospot activity in it, is a permanent source of relatively slow particles moving in an approximately radial direction. From the point of view of this definition, there is no point in contrasting plages with bright coronal regions (if one is only concerned with the localisation of the source of corpuscles on the solar disc). The only statement that can be made is that the magnetic field (unipolar) exists slightly longer than the floccular and enhanced coronal emission. The above definition and its consequences are then compared and contrasted with the theories of Vsekhsvyatskiy et al (Ref 9),

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s/033/60/037/03/001/027 On the Existence of a General Field of Corpusties Emitted by the Sun

Allen (Ref 10), Pecker and Roberts (Ref 11). Bell and Glazer (Ref 12) and others. If the present interpretation is accepted then there is no necessity to introduce large concentrations of corpuscles in the streams emitted by the Sun. It is concluded that available observational material can be interpreted by assuming that a general corpuscular field does exist but the concentration is smaller by several orders of magnitude than that suggested in Refs (9) and (19), in which it is argued that  $n_e \approx 10^3 cm^{-3}$ This means that hypotheses according

to which the origin of geomagnetic disturbances is due to the existence of an intense general corpuscular field are now very much less acceptable. There are 1 figure and 29 references, 8 of which are

English, 1 German, 1 Swedish and 19 Soviet.

ASSOCIATION: Astronomicheskiy Sovet Akademii nauk SSSR (Astronomical Council of the Ac.Sc., USSR)

Card3/3 SUBMITTED: February 25, 1960

81834 s/033/60/037/03/002/027 E032/E314

3.9100 AUTHOR:

TITLE:

Mustel', E.R.

On Corpuscular Velocities in Streams Responsible for

M-disturbances

PERIODICAL: Ast

Astronomicheskiy zhurnal, 1960, Vol 37, No 3, pp 403-407

ABSTRACT: The present paper is concerned with the fact that very frequenctly the time lag  $\Delta$ t of all the members of a geomagnetic sequence remains approximately constant.  $\Delta$  t is constant in spite of the fact that the physical state of the active region giving rise to the geomagnetic sequence can undergo. during the existence of the latter very strong variations ( from a very bright plage with strong coronal  $\lambda$  5303 emission to a unipolar region without floccular and bright  $\lambda$  5303 emission). In general, the time of commencement of a disturbance in a sequence, as estimated from the formula  $t = \frac{t}{0} + 27 \times n$ , is not

related to the intensity variations in the disturbance (when the effect of variations in B

account). Moreover, a change in the physical state of an active region should lead to a noticeable change in the

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On Corpuscular Velocities in Streams Responsible for M-disturbances

corpuscular velocity v in the stream from one revolution to the next and thus give rise to very noticeable changes in  $\Delta$  t (cf Ref 1). In view of these facts, it is concluded that each corpuscular stream above the active region consists of a collection of relatively stable magnetic tubes of force. This conclusion is in agreement with the results reported by Bugoslavskaya (Ref 7), who showed that straight intense rays emerge from facular regions. In the case under consideration the velocity of motion of gases v along the tubes may be much smaller than the velocity calculated by Chapman (Ref 5), Approximate calculations carried out using Eq (4) show that field strengths of the order of 10 - 10 0e are sufficient to carry away (during rotation of the sun) all the matter included in these tubes. It is argued that the velocity of gases inside these tubes can frequently be rather small. The problem of the appearance and disappearance of tubes of force is also discussed. These tubes are apparently produced during the initial stage of development of an active region. It is pointed out

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On Corpuscular Velocities in Streams Responsible for M-disturbances

that the absence of stability in coronal tubes associated with active regions of types E and F may lead to the absence of M-disturbances from these regions. According to the model used in the present paper, the main velocity of corpuscles relative to Earth is the transverse velocity which is of the order of 400 km/s. This can also explain (see Refs 1, 3) the rectangular character of many of the M-disturbances. Moreover, the position of the vector V may apparently give a more natural explanation of the fact that M-disturbances commence in the second half of the day according to local time. It is argued that the transverse motion of magnetic tubes should not lead to an appreciable transverse motion of gases in cometar/ There are 1 figure and 10 Soviet references.

ASSOCIATION: Astronomicheskiy Sovet Akademii nauk SSSR (Astronomical Council of the Ac.Sc., USSR)

SUBMITTED: March 4, 1960

Card3/3

PHASE I BOOK EXPLOITATION

80V/5154

# Mustel', Eval'd Rudol'fovich

Heat Blooding College College

Zvezdnyye atmosfery (Stellar Atmospheres) Moscow, Fizmatgiz, 1960. 444 p. 2,500 copies printed. (Series: Problemy teoreticheskoy astrofiziki)

Editorial Board: V.A. Ambertsumyan, E.R. Mustel', A.B. Severnyy, and V.V. Sobolev; Ed.: B.Ye. Gel'fgat; Tech. Ed.: V.N. Kryuchkova.

PURPOSE: This book is intended for astronomers and astrophysicists.

COVERAGE: This book on the properties of steller atmospheres is the first of a multivolume work to be published in the next few years under the general title, Problemy teoreticheskoy astrofisiki (Problems of Theoretical Astrophysics). Individual volumes in the series will include: Fisika Solntsa (Physics of the Sun), Planetarnyye tumannosti (Planetary Nebulae), Nestatsionarnyye zvezdy (Nonstationary Stars), Meshavezdnaya sreda (Interstellar Medium), Zvezdnyye sistemy (Star Systems), Fizicheskiye problemy vozdeystviya Solntsa na Zemlyu (Physical Problems Concerning the Effects of the Sun on the Earth), and Atmosfery planet

Card 1/11

MIKHAYLOV, A.A., otv.red.; ZVEREV, M.S., red.; KULIKOVSKIY, P.G., red.; MASEVICH, A.G., red.; MUSTEL', E.R., red.; SOBOLEV, V.V., red.; SUBBOTIH, M.F., red.; SAMSONENKO, L.V., red.; TUMARKINA, W.A., tekhn.red.

[Astronomy in the U.S.S.R. during forty years 1917-1957; collected articles] Astronomia v SSSR sa sorok let. 1917-1957; sbornik statei. Red.kollegiia: A.A.Mikhailov i dr. Moskva, Gos.isd-vo fiziko-matem.lit-ry, 1960. 728 p.

(Astronomy--History)

(MIRA 13:7)

BENDRIKOV, G.A.; KRASNUSHKIN, P.Ye.; REYKHRUDEL', E.M.; POTEMKIN, V.V.;

MUSTEL', Ye.R.; RZHEVKIN, K.S.; IVANOV, I.V.; KHAHLAMOV, Z.A.;

TIKHOHOV, Yu.V.; STRELKOVA, L.P.; KAPTSOV, L.M.; ORDANOVICH,

A.Ye.; KHOKHLOV, R.V.; VORONIN, E.S.; BERESTOVSKIY, G.N.; KRASNO
PEVTSEV, Yu.V.; MINAKOVA, I.I.; YASTREBTSEVA, T.N.; SEMENOV, A.A.;

VINOGRADOVA, M.B.; KARPEYEV, G.A.; DRACHEV, L.A.; TROFIMOVA, N.B.;

SIZOV, V.P.; RZHEVKIN, S.N.; VELIZHANINA, K.A.; NESTEROV, V.S.;

SPIVAK, G.V., red.; NOSYREVA, I.A., red.; GEORGIYEVA, G.I., tekhn.

[Special physics practicum] Spetsial'nyi fizicheskii praktikum.

Moskva, Izd-vo Mosk, univ. Vol.1. [Radio physics and electronics]

Radiofizika i elektronika. Sost. pod red. G.V.Spivaka. 1960.

600 p. (MIRA 13:6)

1. Professorsko-prepodavatel skiy kollektiv fizicheskogo fakul teta Moskovskogo universiteta im. M.V.Lomonosova (for all except Spivak, Mosyreva, Georgiyeva). (Radio) (Electronics)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135730004-7"

وتتك 8/035/61/000/003/040/048 3,1540 A001/A101 Mustel', E.R., Tsap, T T AUTHORS: The spectrophotometry of bright conversions in H- and K-lines in TITLE: spectra of sunspot nucle: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 3, 1961, 54, arstract 3A461 ("Izv. Krymsk astrofiz observ.", 1960, v. 22, 75-80, PERIODICAL: Engl. summary) The authors studied the profiles of emission lines K and B ir the TEXT: spectra of sunspot nuclei. All records of sunspot spectra show a slight asymmetry in the upper part which is apparently due to the Evershed effect. The profiles of the singular conversion of the K line of Ca II in the spectra of three sunspots are well represented by the formula;  $I_{\nu} = P_{\nu} \left[1 - \exp\left(-s_{\nu} N_{1} \left(\tilde{ca} II_{1}\right)\right)\right]$ with turbulent velocity  $v_{*}=0$  and the value of  $N_{1}\approx 4\times 10^{15}~cm^{-2}$ Prim author's summary

[Abstracter's note: Complete translation]

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S/035/61/000/004/029/058 A001/A101

3.1560 AUTHORS:

Mustel', E.R., Kumaygorodskaya, R.N.

TITLE:

On the origination mechanism of emission bands in spectrum of Nova

Herculis 1934 and physical conditions in its envelope

PERIODICAL:

Referativnyy zhurnal. Astronomiya i Geodeziya, no. 4, 1961, 34, abstract 4A345 ("Izv. Krymsk. astrofiz. observ.", 1960, v. 22, 207-224,

Engl. summary)

The authors discuss the problem of the mechanism producing bright lines in spectrum of Nova Hercult 1934. They are of the opinion that the main process leading to origination of bright lines in the star main spectrum is scattering of TEXT: radiation of the extended envelope by the main envelope accompanied by fluorescence. Changes in contours of lines [O I] and H I observed in the spectrum of Nova Herculis are explained. The border parts of bright bands ("peaks") were created by two gaseous condensations situated diametrically, and the central parts of the bands by the extended envelope. Variations in the power of matter ejection by the

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On the origination mechanism	S/035/61/000/004/029/058 A001/A101
star changed the ratio of the band edges to the ty and electronic temperature in the envelope of series estimated from the ratio of intensities of references.	eir central parts Electronic
Abstracter's note: Complete translation]	V. Gorbatskly
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S/035/61/000/005/003/042 A001/A101

3,1560

Mustel', E.R., Galkin, L.S.

TITLE:

AUTHORS:

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The spectrometric studying of hydrogen lines in spectra of peculiar stars of class AO. Part I. Hydrogen lines in spectra of "manganese", "silicon" and "magnesium" stars

PERIODICAL:

Referativnyy zhurnal. Astronomiya i Geodeziya, no. 5, 1961, 22, abstract 5A149 ("Izv. Krymsk. astrofiz. observ.", 1960, v. 22, 225-233, Engl. summary)

The authors studied the contours of hydrogen lines in spectra of ten peculiar stars of class AO with enhanced lines of manganese, silicon and magnesium. They obtained hydrogen line contours in spectra of eight comparison TEXT: stars of classes B9 - A1. Equivalent widths of hydrogen lines H3, H7, H6, HE, H5 and K-line (Ca II) were determined for all stars studied. The contours of hydrogen lines in spectra of "silicon" stars are identical to the contours of corresponding hydrogen lines in the spectra of comparison stars of class AO V. The contours of hydrogen lines in spectra of "manganese" and "magnesium" stars

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The spectrometric studying of hydrogen lines ...

S/035/61/000/005/003/042 A001/A101

studied are shallower and narrower than the corresponding hydrogen lines in the spectra of comparison stars of class AO III. This indicates either the relatively high luminosity of the stars considered or specific conditions in their atmospheres.

From author's summary

[Abstracter's note: Complete translation]

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3.1560

Mustel', E.R., Galkin, L.S.

AUTHORS: TITLE:

The spectrophotometric study of hydrogen lines in spectra of peculiar stars of class A. Part II

PERIODICAL:

Referativnyy zhurnal. Astronomiya i Geodeziya, no. 5, 1,61, 32, abstract 5A227 ("Izv. Krymsk. astrofiz. observ.", 1960, v. 24, 78-90,

Engl. summary)

This is the continuation of the authors' study (RZhAstr, 1955, no. 10, 4276; 1956, no. 9, 5047). Balmer absorption lines in spectra of A-class peculiar stars are studied. The authors present lists of peculiar and normal stars, as well as the graphs of line profiles in spectra of peculiar and standard stars. Each profile was plotted from several spectrograms, to increase their accuracy. The results of comparing the profiles of peculiar and standard stars are presented in graphical form; they show that in most cases the profiles of the Balmer series in the spectra of peculiar stars agree well with the corresponding profiles in the spectra of the normal stars of a similar spectral class. Thus, in all these cases, the structure of peculiar stars atmospheres can not apparently differ mark-

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The spectrophotometric study ...

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edly from the structure of normal stars atmospheres of a similar class. To confirm additionally this conclusion, electronic pressure  $n_e\ (n_m)$  was determined for a number of stars studied by the formula:  $\lg n_e = 23.26 - 7.5 \lg n_m$ ; the quantity  $N_{02}H$  was determined by the formula:  $N_{02}H = (mc^2/\pi\,e^2\,\lambda^2 f)\,W_{\lambda}$ , and the quantity  $n_e\ (H_{\gamma})$  by the formula:  $W_0^2 = kN_{02}Hn_e\ (R_c/0.45)^{3/2}$  assuming the value of  $H_{02}H$  already calculated. All these parameters are presented in tables. Graphs are also presented illustrating the relations between  $\lg n_e\ (n_m)$  and  $\lg n_e\ (H_{\gamma})$ , and between  $\lg N_{02}H$  and  $\lg n_e\ (H_{\gamma})$ . The analysis of these graphs also confirms that apparently the structure of atmospheres of the most peculiar stars differs slightly from the structure of atmospheres of the normal stars of a similar class. It is noted that in some cases (e.g.  $\alpha$   $^2Psc)$  the profiles of Balmer lines of peculiar stars do differ noticeably from the corresponding profiles of the standard stars spectra. There are 9 references.

From authors' summary

[Abstracter's note: Complete translation]

Card 2/2

5,712/60/023/000/003/014 D218/D301

3,1540 (also 1157)

Mustel', E. R. and Is'ap,

TITLE:

AUTHORS:

Behavior of the bright reversal in the center of H and

K Ca II lines in the region of a sunspot

SOURCE:

Akademiya nauk SOUR. Krynskaya astrofizioheshaya observatoriya. Izvestiya, v. 23, Moscow, 1960, 299-303

TEXT: A continuation of earlier work. The authors report a more detailed study of the transition from double H and K lines of Ca II into single lines. To obtain these more detailed results, the profiles of the K line were investigated at different distances from the sunspot center. The spectra employed were obtained with the solar tower telescope at the Crimean Astrophysical Observatory with a dispersion of 0.192 A/mm. Photometric analysis of the K line for two sunspots reveals in a figure the absolute intensity Iv as a function of distance from the sunspot center. It is found that this intensity has a minimum at the center of the umbra and

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Behavior of the ...

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increases on either side. These reults can be explained in terms of the Evershed effect. Another figure shows the photometric tracing of the K line at different distances from the sunspot center. There are 5 figures and 2 Soviet-bloc references.

SUBMITTED: May 12, 1959

Card 2/2 .

MUSTEL, E. R.

"Coronal magnetic flux - tubes connected with the centers of activity as a possible source of M perturbations."

report to be submitted for the IAU Symposium on the Corona, Cloudcroft, New Mexico, 28-30 August 1961.

L 6696-65 EWT(1)/EWG(v)/EEC-L/EEC(t) Pe-5/Pq-L AFETR/ESD(t) GW 55
ACCESSION NR: AR4943884 S/0269/63/000/011/0054/0054

SOURCE: Ref. zh. Astronomiya, Otdel'ny\*y vy\*pusk, Abs. 11.51.385

AUTHOR: Mustel', E. R.; Yegorovs, N. B.

TITLE: Comparison of geomagnetic disturbances with solar phenomena

CITED SOURCE: Solnechn. korpuskulyarn. potoki, lokalizatsiya ikh istochnikov i svyaz' s geomagnitn. vozmushcheniyami. No. 1. M., AN SSSR, 1961, 5-35

TOPIC TAGS: geomagnetic activity, solar activity, magnetic storm

TRANSLATION: An attempt was made to directly compare geomagnetic activity with solar active centers during the period of the highest level of solar activity in the current 11-year cycle, viz., July 1, 1957 to January 2, 1959. A comparison was made of the synoptic charts of the Sun for each of the Sun's rotations (21) during the indicated period of time. On charts there were plotted, in addition to date and latitude, the flocculi passing through or near to the center of the disk, the moments of the

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beginning of Type IV bursts of radio-frequency radiation, the moments of the maxima of class 2 and 3 flares, and the index K. There were distinguished two basic types of magnetic storms: M-storms and sporadic storms. In attempts at unique comparisons, the authors were guided by previously derived conclusions, which reduced to the fact that sporadic storms follow chromospheric flares, and M-disturbances follow the passage of active regions across the central meridian. There is stressed the difficulty of unique comparison due to the great saturation of the Sun by active formations. On the basis of the conducted analysis it was established that the 27-day frequency of type M geomagnetic disturbances is expressed very weakly during this epoch, which is evidently connected with the instability of the regions, the nonstationarity of corpuscular streams, and the interaction between neighboring coronal formations, due to which the direction of the corpuscular streams can differ from radial. For the considered period it was possible to trace only two of the 27-day sequences. However, in the authors' opinion, even in this period of very high activity the basic sources of type M geomagnetic disturbances are flocculi passing through or near to the center of the solar disk. With respect to sporadic disturbances it is noted that in a number of cases class 2, not class 3, flares are the most active in the sense of generating such disturbances. The average delay time of a geomagnetic disturbance relative to a

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ACCESSION NR: AR4043884

Clare is ~2<sup>d</sup>. A disturbance of the geomagnetic field is by no means caused by all capable of causing a sporatic magnetic storm and those not causing a storm. Neither the position of the fizer on the disk nor the connection with Type IV bursts of references.

SUB CODE: AA, ES ENCL: 00

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E032/E514

AUTHOR:

Mustel', E. R.

TITLE:

Results of a Statistical Study of Geomagnetic Disturbances for Five Cycles of Solar Activity

PERIODICAL: Astronomicheskiy zhurnal, 1961, Vol.38, No.1,

pp. 28-44

TEXT: In a number of previous papers concerned with the relation between active regions on the Sun and the geomagnetic M-disturbances the present author used a statistical approach based on the "method of superimposed epochs" (Refs. 1-5), However, only three cycles of solar activity, namely, 16, 17 and 18 were considered and, moreover; in the case of cycle No.17 only a limited period of time (1942-1944) was included. Furthermore, the statistical analysis requires a large volume of data if significant deductions are to be made. It was, therefore, decided to use the entire period for which calcium spectroheliograms are available at the various world observatories. This period includes five cycles of solar activity beginning at 1905. The data employed in the present analysis are tabulated in Table 1.

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